Resource Action: EWG-107 **Task Force Recommendation Category:** 1

IMPLEMENT A COMPREHENSIVE ADAPTIVE MANAGEMENT PROGRAM FOR FEATHER RIVER HATCHERY

Related Resource Actions:

- This is an omnibus resource action intended to address numerous concerns about operations and practices of the FRH.
- EWG-107 is related, but is specific to development of a tagging program.

1. Resource Action Description:

The goal of this program is to provide a framework for ongoing evaluation and improvements in operations of the Feather River Hatchery (FRH). This resource action would create a program to adaptively manage FRH practices to enhance benefits while assessing and minimizing negative impacts.

The evaluation of FRH practices would begin with a rigorous review of management and production goals. In addition, this review would include an assessment of: 1) release strategies (including timing, size at release and release location), 2) straying impacts, 3) genetic integrity of FR stocks, 4) marking/monitoring program design and effectiveness, 5) interactions with wild fishes, 6) diseases within and propagated by FRH, and 7) rearing practices, including exposing hatchery fish to natural conditions (e.g. add cover and predators to hatchery raceways) . An adaptive approach to addressing these issues is necessary because goals of the FRH are likely to change, and because of uncertainty regarding necessary changes in hatchery operations. A long-term, adaptive approach is also sensible given that it will take several generations (with at typical 3-4 year age at maturity) to observe effectiveness of management actions. DWR would provide necessary staff to evaluate these issues, implement necessary changes, and coordinate findings/decisions with a FRH advisory committee. Specific tasks, studies and changes in hatchery practices would be developed through products of SP-F9 reports and early meetings with the FRH advisory committee. This program would continue indefinitely, or as long as the FRH is producing anadromous salmonids. The program would be subject to ongoing review by annual meetings of the interagency advisory committee, and would be subject to a thorough written review and critique every five years.

2. Project Nexus

Under the FERC license the FRH will continue to be a mitigation feature of the State Water Project's Oroville unit, albeit likely with some significant operational changes. Under the FERC agreement and through the ESA consultation process, DWR will be required to better understand mitigation success and the impacts of hatchery (and project) on natural salmonid populations. In terms of numbers of fish, the hatchery has done an admirable job of mitigating the habitat losses – especially with fall Chinook. However the hatchery has had some

undesirable impacts including negative interactions with wild salmonids, obscuring the genetic and phenotypic differences between fall and spring Chinook and release practices have increased straying of Feather River Chinook to the other Central Valley streams resulting in genetic introgression with other Central Valley stocks.

3. Potential Environmental Benefits

Ongoing evaluation of the effects and benefits of hatchery operations should result in a more environmentally friendly mitigation hatchery and salmonid populations that have increased overall fitness. As part of a broader Central Valley salmonid restoration/science program, the evaluation program is essential to recovery to listed salmonid runs.

4. Potential Constraints

The potential constraints are institutional and financial, but also include coordination with other similar efforts through the Central Valley. Funding needs may include creating new environmental scientist positions (2) to carry out the hatchery evaluation program. This will increase overall costs of the SWP operations. Hiring new staff may be difficult given current state budget crisis related hiring restrictions. Integration within Valley-wide hatchery/salmon science system will also be a challenge. To be most effective, the FRH program should be an integral part of a Valley-wide system. This management system includes coordination with other Central Valley hatcheries and integration with salmon inland/ocean salmon marking and monitoring programs.

5. Existing Conditions

With the exception of the current FERC related process, there is no concerted on-going effort on part of DWR or DFG to evaluate the effect of the Feather River Hatchery. This effort is needed to help protect salmon and steelhead resources and to prepare for subsequent FERC licenses and compliance with state and federal endangered species acts.

6. Design Considerations

No physical design considerations are associated with this resource action.

7. Synergism and Conflicts

This action is synergistic with all actions designed to make operation of the FRH more environmentally sensitive, while still meeting DWR's mitigation responsibilities for construction and operation of the Oroville complex. There are no apparent conflicts with other proposed resource actions or existing hatchery operations.

8. Uncertainties

Given the adaptive nature of the proposed program future required changes to the FRH are uncertain. Similarly, costs for future programs recommend by this adaptive approach are unknown.

The decision making process for the advisory team and the adaptive management component of this program has not been established. However, decision making practices for this effort will follow protocols established for other adaptive management programs that will be developed as part of the relicensing settlement.

9. Cost Estimate

Additional environmental scientist staff time will be required to perform the hatchery evaluation proposed in this resource action. We expect this effort would require two environmental scientist positions at an approximate annual cost of $150,000. Some additional costs not included in this estimate may be required for office equipment, travel and training. These costs would occur annually for as long as the FRH continues to produce anadromous salmonids.
Additional costs may also be associated with changes in hatchery practices which may be recommend by review and adaptive management. Unfortunately there is no way to estimate these costs at this time.

10. Recommendations

Development of an adaptive hatchery evaluation program is essential to successful management of the FRH. This program should be given a very high priority.